a mapping mechanism, coupled to the signal generation mechanism, to apply weighing factors generated by the weighing mechanism to a corresponding Time-and-Frequency-Bounded function, and subsequently summing the weighted Time-and-Frequency-Bounded functions to thereby generate a corresponding plurality of Time-and-Frequency-Bounded packets, the plurality of Time-and-Frequency-Bounded packets comprising a Time-and-Frequency-Bounded information stream; and

a transmission mechanism to transmit the plurality of Time-and-Frequency-Bounded packets over the transmission medium.

2. The system of claim 1, wherein the receiving mechanism comprises means for buffering the incoming stream and means for grouping the bits in groups.

3. The system of claim 2, wherein the system is arranged to determine the number of bits in a group dynamically.

4. The system of claim 2, wherein the means for grouping the bits are arranged to add one or more padding bits in case there is insufficient data in the incoming stream of information to fill a group.

5. The system of claim 2, comprising an error correction mechanism arranged to add error correction bits to the bit groups.

6. The system of claim 5, wherein the system is arranged to define the number of error correction bits dynamically.

7. The system of claim 1, comprising a modulator to modulate the sum of the weighted Time-and-Frequency-Bounded functions with a carrier frequency.

8. The system of claim 5, wherein the error correction mechanism is arranged to receive information on the quality of the transmission and/or the transmission medium on an input to optimize the error correction algorithm depending on effects of the transmission medium.

9. The system of claim 1, wherein the weighing mechanism is arranged to receive information on the quality of the transmission and/or the transmission medium on an input for optimizing weight generation, given the conditions of the transmission medium.

10. The system of claim 1, wherein the transmission mechanism is arranged to transmit the Time-and-Frequency-Bounded packets in the order in which the packets were constructed.

11. The system of claim 1, wherein at least one of the Time-and-Frequency-Bounded functions is chosen from the sub-class of Hermite-Gauss functions.

12. A method for transmitting digital data, the method comprising the steps of:

receiving an incoming stream of digital information in a binary format;

using the digital information to generate a sequence of weighing factors;

generating a plurality of smooth Time-and-Frequency-Bounded functions;

applying the weighing factors to the plurality of Time-and-Frequency-Bounded functions; and

summing the weighted Time-and-Frequency-Bounded functions to thereby generate a corresponding plurality of Time-and-Frequency-Bounded packets, a plurality of Time-and-Frequency-Bounded packets comprising a Time-and-Frequency-Bounded information stream; and

transmitting the plurality of Time-and-Frequency-Bounded packets over the transmission medium.

13. The method of claim 12, wherein the step of receiving the incoming stream comprises the buffering of the incoming stream and the grouping of bits in groups.

14. The method of claim 13, wherein the number of bits in a group is defined dynamically.

15. The method of claim 13, wherein one or more padding bits are added in case there is insufficient data in the input sequence to fill a group.

16. The method of claim 13, wherein the step of receiving the incoming stream is followed by adding error correction bits to the group.

17. The method of claim 16, wherein the number of error correction bits is defined dynamically.

18. The method of claim 17, wherein the step of summing the weighted Time-and-Frequency-Bounded functions is followed by modulating the sum of the weighted Time-and-Frequency-Bounded functions with a carrier frequency.

19. The method of claim 16, wherein the step of adding error correction bits is optimized for the effects of the transmission medium.

20. The method of claim 12, wherein the step of generating the weighing factors is optimized for the effects of the transmission medium.

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